

NASA TECH BRIEF

John F. Kennedy Space Center



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Monitor for Checking Electric-Field Meters

The problem:

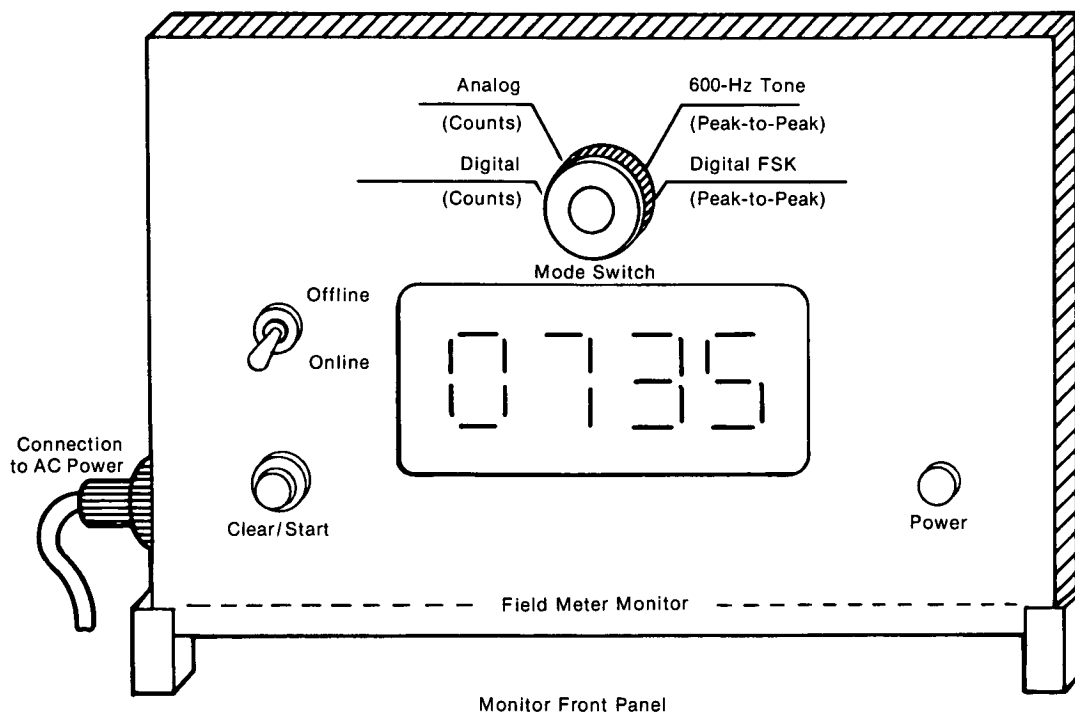
Electric-field meter stations are used to measure electric-field potentials at remote locations. The measured data are transmitted over communication lines to a central processing station. Periodically these units are checked from the central station to see if they operate properly. Normally when the central station receives improper readings from a unit, a technician is dispatched to replace it. The problem with this procedure is that one cannot establish whether the unit or the communication line is at fault. Several units have to be replaced to find a faulty communication line.

The solution:

A newly-developed portable monitor can be used to check the electric-field meters on location. A faulty communication line or a faulty unit can be determined on the spot.

How it's done:

The monitor connects externally into the electric-field meter with a T-connection. Throughout the tests the meter is checked without disturbing the pressurized seal that encloses the electronics. Normally the monitor is placed on top of the meter enclosure. Specially-designed angle legs prevent the monitor from sliding off. The monitor operates from a standard 115-Vac power supply.



(continued overleaf)

As shown in the illustration, the monitor panel includes an online/offline switch, a mode switch, a clear/start button, a power button, and a digital display. The online/offline switch provides two modes. In the online position, the meter indicates only the output signal conditions from the meter and the interrogate signal input level into the meter. In the offline position, the communication line connection between the meter and the central station becomes open. The meter then cannot receive signals from the central station.

The mode switch has four selections. In the Digital position, the monitor displays the frequency shift-keyed (FSK) output of the electric-field meter. In the Analog position, an analog-to-digital converter changes the analog output to its digital count equivalent. When the switch is in the 600-Hz Tone position, the monitor measures the peak-to-peak level of the 600-Hz interrogation signal transmitted from the central receiving station. This setting is also used to measure the level of the interrogation tone output generated by the meter. The level of the interrogation

tone must be at least 0.7 V peak-to-peak in the online position. Finally, in the Digital FSK position, the monitor indicates the peak-to-peak level of the FSK signal transmitted to the receiver station. This signal level must be at least 3 V peak-to-peak when the meter is in the offline position.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Kennedy Space Center
Code AA-STA-1
Kennedy Space Center, Florida 32899
Reference: TSP75-10296

Patent status:

NASA has decided not to apply for a patent.

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